



REPLACEMENT SHEET

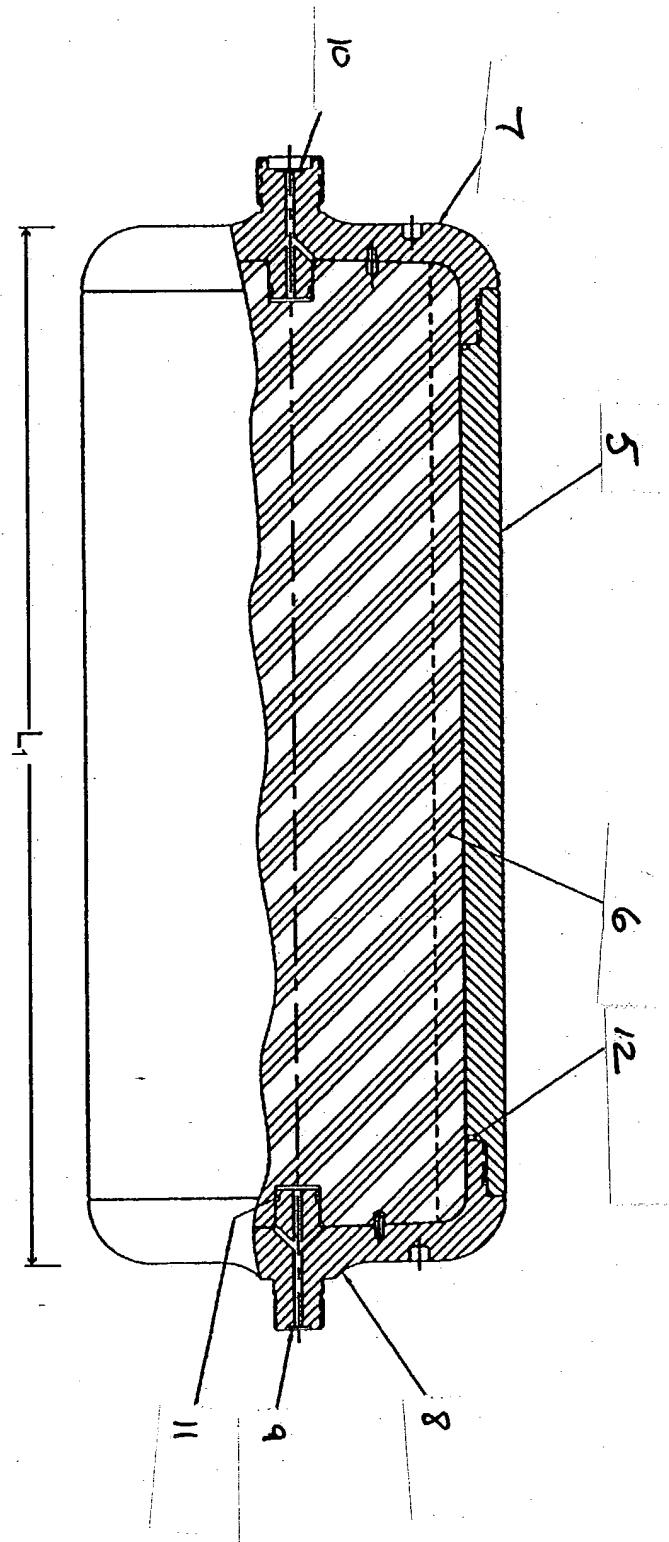


FIG. 2A

REPLACEMENT SHEET

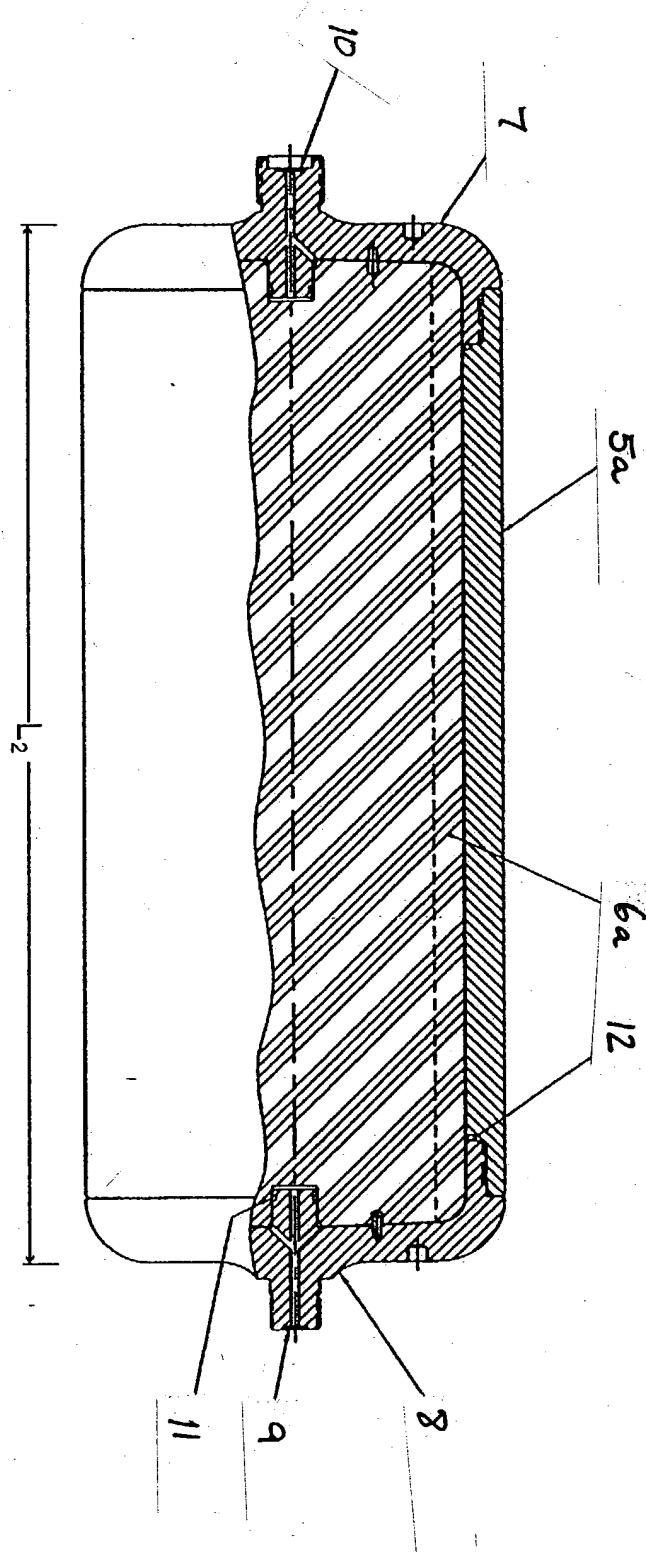


FIG. 2B





## REPLACEMENT SHEET

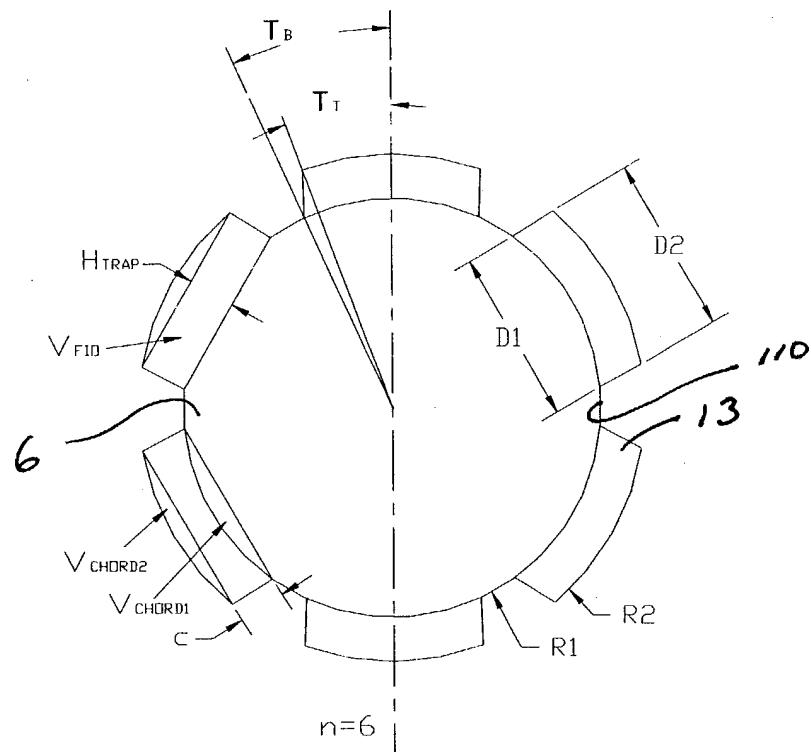
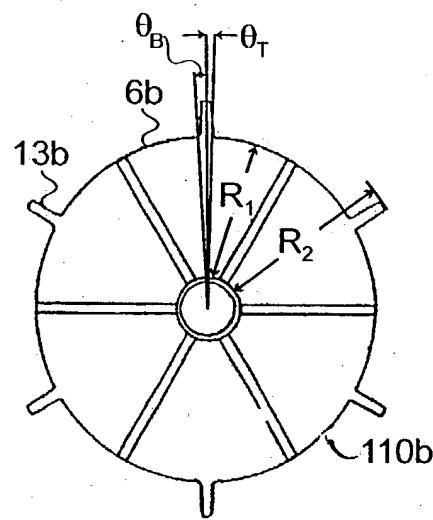


Figure 3B



## REPLACEMENT SHEET



**FIG. 6**



## REPLACEMENT SHEET

<u>D2</u> =	<u>Lateral distance across fin top</u>	<u>0.083</u>	in
<u>D1</u> =	<u>Lateral distance across fin bottom</u>	<u>0.114</u>	in
<u>R1</u> =	<u>Inner radius of the core</u>	<u>2.145</u>	in
<u>R2</u> =	<u>Outer radius of the core</u>	<u>2.598</u>	in
<u>n</u> =	<u>Number of fins</u>	<u>6</u>	<u>number of fins</u>
<u>L</u> =	<u>Length of core</u>	<u>30.089</u>	in
<u>THETAT<sub>T</sub></u> =	<u>Angle formed by one half the fin top surface</u>	<u>0.016</u>	radians
<u>THETAB</u> =	<u>Angle formed by one half the fin bottom surface</u>	<u>0.027</u>	radians
<u>c</u> =	<u>Length of segment connecting endpoints of D<sub>1</sub> and D<sub>2</sub></u>	<u>0.454</u>	in
<u>H<sub>TRAP</sub></u> =	<u>Height of a trapezoid between D<sub>1</sub> and D<sub>2</sub></u>	<u>0.453</u>	in
<u>V<sub>TRAP</sub></u> =	<u>Volume of a trapezoid included between D<sub>1</sub>, D<sub>2</sub>, and height</u>	<u>1.344</u>	in <sup>2</sup>
<u>THETAT<sub>1</sub></u> =	<u>Central angle of chord formed at fin bottom</u>	<u>0.053</u>	radians
<u>V<sub>CHORD1</sub></u> =	<u>Volume formed by chord at fin bottom</u>	<u>0.00173</u>	in <sup>2</sup>
<u>THETAT<sub>2</sub></u> =	<u>Central angle of chord formed at fin top</u>	<u>0.032</u>	radians
<u>V<sub>CHORD2</sub></u> =	<u>Volume formed by chord at fin top</u>	<u>0.00055</u>	in <sup>2</sup>
<u>V<sub>FIN</sub></u> =	<u>Volume of fin, equal to V<sub>TRAP</sub> + V<sub>CHORD2</sub> - V<sub>CHORD1</sub></u>	<u>1.343</u>	in <sup>2</sup>
<u>V<sub>R1</sub></u> =	<u>Volume of cylinder with a radius of R<sub>1</sub></u>	<u>434.910</u>	in <sup>2</sup>
<u>V<sub>CORE</sub></u> =	<u>Volume of Core, equal to nV<sub>FIN</sub> + V<sub>R1</sub></u>	<u>442.966</u>	in <sup>3</sup>
<u>V<sub>R2</sub></u> =	<u>Volume of cylinder with a radius of R<sub>2</sub></u>	<u>638.004</u>	in <sup>3</sup>
<u>V<sub>LIQUID</sub></u> =	<u>Volume of liquid, equal to V<sub>R2</sub> - V<sub>CORE</sub></u>	<u>195.038</u>	in <sup>3</sup>
<u>V<sub>LIQUID</sub></u> =	<u>Volume of liquid, equal to V<sub>R2</sub> - V<sub>CORE</sub></u>	<u>3196.09</u>	mL

**Figure 7**

CIPE JC180  
JAN 12 2004  
PATENT & TRADEMARK OFFICE

REPLACEMENT SHEET

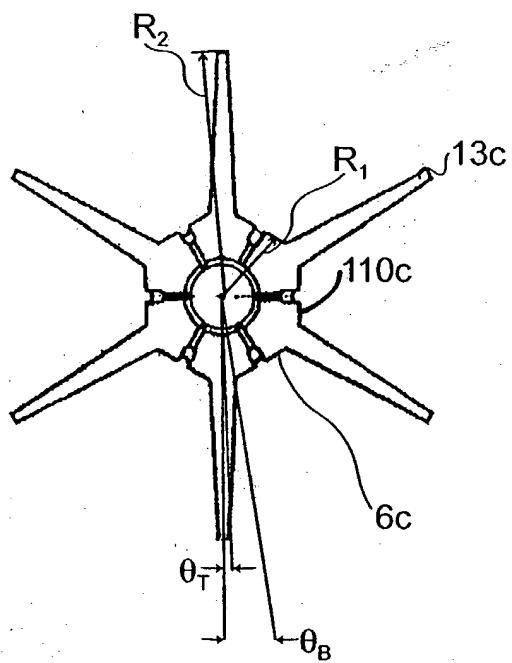


FIG. 8



## REPLACEMENT SHEET

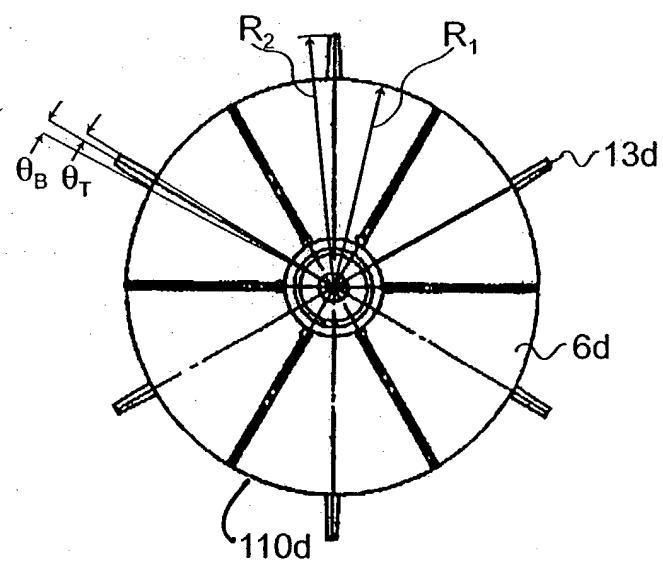
<u>D2</u> =	<u>Lateral distance across fin top</u>	<u>0.1</u>	in
<u>D1</u> =	<u>Lateral distance across fin bottom</u>	<u>0.25</u>	in
<u>R1</u> =	<u>Inner radius of the core</u>	<u>0.825</u>	in
<u>R2</u> =	<u>Outer radius of the core</u>	<u>2.598</u>	in
<u>n</u> =	<u>Number of fins</u>	<u>6</u>	number of fins
<u>L</u> =	<u>Length of core</u>	<u>30.089</u>	in
<u>THETAT</u> =	<u>Angle formed by one half the fin top surface</u>	<u>0.019</u>	radians
<u>THETAB</u> =	<u>Angle formed by one half the fin bottom surface</u>	<u>0.152</u>	radians
<u>c</u> =	<u>Length of segment connecting endpoints of D<sub>1</sub> and D<sub>2</sub></u>	<u>1.784</u>	in
<u>H<sub>TRAP</sub></u> =	<u>Height of a trapezoid between D<sub>1</sub> and D<sub>2</sub></u>	<u>1.782</u>	in
<u>V<sub>TRAP</sub></u> =	<u>Volume of a trapezoid included between D<sub>1</sub>, D<sub>2</sub>, and height</u>	<u>H<sub>TRAP</sub></u>	<u>9.383</u> in <sup>2</sup>
<u>THETA<sub>1</sub></u> =	<u>Central angle of chord formed at fin bottom</u>	<u>0.304</u>	radians
<u>V<sub>CHORD1</sub></u> =	<u>Volume formed by chord at fin bottom</u>	<u>0.04782</u>	in <sup>2</sup>
<u>THETA<sub>2</sub></u> =	<u>Central angle of chord formed at fin top</u>	<u>0.038</u>	radians
<u>V<sub>CHORD2</sub></u> =	<u>Volume formed by chord at fin top</u>	<u>0.00097</u>	in <sup>2</sup>
<u>V<sub>FIN</sub></u> =	<u>Volume of fin, equal to V<sub>TRAP</sub> + V<sub>CHORD2</sub> - V<sub>CHORD1</sub></u>	<u>9.337</u>	in <sup>2</sup>
<u>V<sub>R1</sub></u> =	<u>Volume of cylinder with a radius of R<sub>1</sub></u>	<u>64.336</u>	in <sup>3</sup>
<u>V<sub>CORE</sub></u> =	<u>Volume of Core, equal to nV<sub>FIN</sub> + V<sub>R1</sub></u>	<u>120.356</u>	in <sup>3</sup>
<u>V<sub>R2</sub></u> =	<u>Volume of cylinder with a radius of R<sub>2</sub></u>	<u>638.004</u>	in <sup>3</sup>
<u>V<sub>LIQUID</sub></u> =	<u>Volume of liquid, equal to V<sub>R2</sub> - V<sub>CORE</sub></u>	<u>517.648</u>	in <sup>3</sup>
<u>V<sub>LIQUID</sub></u> =	<u>Volume of liquid, equal to V<sub>R2</sub> - V<sub>CORE</sub></u>	<u>8482.73</u>	mL

Figure 9

RECEIVED  
JAN 16 2004  
TC 1700



## REPLACEMENT SHEET



**FIG. 10**

## REPLACEMENT SHEET



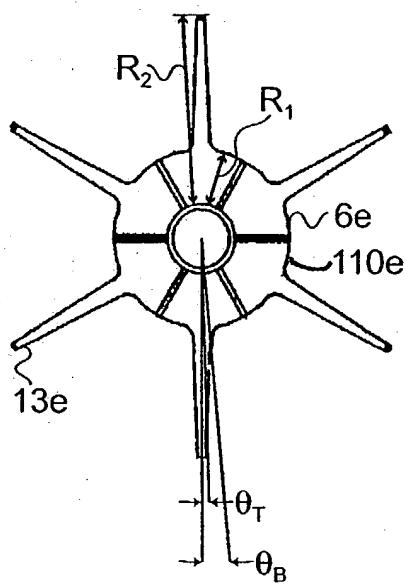
<u>D2</u> =	<u>Lateral distance across fin top</u>	<u>0.083</u>	<u>in</u>
<u>D1</u> =	<u>Lateral distance across fin bottom</u>	<u>0.114</u>	<u>in</u>
<u>R1</u> =	<u>Inner radius of the core</u>	<u>2.145</u>	<u>in</u>
<u>R2</u> =	<u>Outer radius of the core</u>	<u>2.598</u>	<u>in</u>
<u>n</u> =	<u>Number of fins</u>	<u>6</u>	<u>number of fins</u>
<u>L</u> =	<u>Length of core</u>	<u>30.089</u>	<u>in</u>
<u>THETA<sub>T</sub></u> =	<u>Angle formed by one half the fin top surface</u>	<u>0.016</u>	<u>radians</u>
<u>THETA<sub>B</sub></u> =	<u>Angle formed by one half the fin bottom surface</u>	<u>0.027</u>	<u>radians</u>
<u>c</u> =	<u>Length of segment connecting endpoints of D<sub>1</sub> and D<sub>2</sub></u>	<u>0.454</u>	<u>in</u>
<u>TRAP</u> =	<u>Height of a trapezoid between D<sub>1</sub> and D<sub>2</sub></u>	<u>0.453</u>	<u>in</u>
<u>V<sub>TRAP</sub></u> =	<u>Volume of a trapezoid included between D<sub>1</sub>, D<sub>2</sub>, and height</u>	<u>1.344</u>	<u>in<sup>2</sup></u>
<u>THETA<sub>1</sub></u> =	<u>Central angle of chord formed at fin bottom</u>	<u>0.053</u>	<u>radians</u>
<u>V<sub>CHORD1</sub></u> =	<u>Volume formed by chord at fin bottom</u>	<u>0.00173</u>	<u>in<sup>2</sup></u>
<u>THETA<sub>2</sub></u> =	<u>Central angle of chord formed at fin top</u>	<u>0.032</u>	<u>radians</u>
<u>V<sub>CHORD2</sub></u> =	<u>Volume formed by chord at fin top</u>	<u>0.00055</u>	<u>in<sup>2</sup></u>
<u>V<sub>FIN</sub></u> =	<u>Volume of fin, equal to V<sub>TRAP</sub> + V<sub>CHORD2</sub> - V<sub>CHORD1</sub></u>	<u>1.343</u>	<u>in<sup>2</sup></u>
<u>V<sub>R1</sub></u> =	<u>Volume of cylinder with a radius of R<sub>1</sub></u>	<u>434.910</u>	<u>in<sup>3</sup></u>
<u>V<sub>CORE</sub></u> =	<u>Volume of Core, equal to nV<sub>FIN</sub> + V<sub>R1</sub></u>	<u>442.966</u>	<u>in<sup>3</sup></u>
<u>V<sub>R2</sub></u> =	<u>Volume of cylinder with a radius of R<sub>2</sub></u>	<u>638.004</u>	<u>in<sup>3</sup></u>
<u>V<sub>LIQUID</sub></u> =	<u>Volume of liquid, equal to V<sub>R2</sub> - V<sub>CORE</sub></u>	<u>195.038</u>	<u>in<sup>3</sup></u>
<u>V<sub>LIQUID</sub></u> =	<u>Volume of liquid, equal to V<sub>R2</sub> - V<sub>CORE</sub></u>	<u>3196.09</u>	<u>mL</u>

Figure 11

RECEIVED  
JAN 16 2004  
TC 1700



## REPLACEMENT SHEET



**FIG. 12**



## REPLACEMENT SHEET

<u>D2</u> =	<u>Lateral distance across fin top</u>	<u>0.113</u>	in	
<u>D1</u> =	<u>Lateral distance across fin bottom</u>	<u>0.223</u>	in	
<u>R1</u> =	<u>Inner radius of the core</u>	<u>1.052</u>	in	
<u>R2</u> =	<u>Outer radius of the core</u>	<u>2.598</u>	in	
<u>n</u> =	<u>Number of fins</u>	<u>6</u>	number of fins	
<u>L</u> =	<u>Length of core</u>	<u>30.089</u>	in	
<u>THETA<sub>T</sub></u> =	<u>Angle formed by one half the fin top surface</u>	<u>0.022</u>	radians	
<u>THETA<sub>B</sub></u> =	<u>Angle formed by one half the fin bottom surface</u>	<u>0.106</u>	radians	
<u>C</u> =	<u>Length of segment connecting endpoints of D<sub>1</sub> and D<sub>2</sub></u>	<u>1.552</u>	in	
<u>H<sub>TRAP</sub></u> =	<u>Height of a trapezoid between D<sub>1</sub> and D<sub>2</sub></u>	<u>1.551</u>	in	
<u>V<sub>TRAP</sub></u> =	<u>Volume of a trapezoid included between D<sub>1</sub>, D<sub>2</sub>, and height</u>	<u>H<sub>TRAP</sub></u>	<u>7.842</u>	in <sup>2</sup>
<u>THETA<sub>1</sub></u> =	<u>Central angle of chord formed at fin bottom</u>	<u>0.212</u>	radians	
<u>V<sub>CHORD1</sub></u> =	<u>Volume formed by chord at fin bottom</u>	<u>0.02652</u>	in <sup>2</sup>	
<u>THETA<sub>2</sub></u> =	<u>Central angle of chord formed at fin top</u>	<u>0.043</u>	radians	
<u>V<sub>CHORD2</sub></u> =	<u>Volume formed by chord at fin top</u>	<u>0.00139</u>	in <sup>2</sup>	
<u>V<sub>FIN</sub></u> =	<u>Volume of fin, equal to V<sub>TRAP</sub> + V<sub>CHORD2</sub> - V<sub>CHORD1</sub></u>	<u>7.817</u>	in <sup>2</sup>	
<u>V<sub>R1</sub></u> =	<u>Volume of cylinder with a radius of R<sub>1</sub></u>	<u>104.611</u>	in <sup>2</sup>	
<u>V<sub>CORE</sub></u> =	<u>Volume of Core, equal to nV<sub>FIN</sub> + V<sub>R1</sub></u>	<u>151.511</u>	in <sup>3</sup>	
<u>V<sub>R2</sub></u> =	<u>Volume of cylinder with a radius of R<sub>2</sub></u>	<u>638.004</u>	in <sup>3</sup>	
<u>V<sub>LIQUID</sub></u> =	<u>Volume of liquid, equal to V<sub>R2</sub> - V<sub>CORE</sub></u>	<u>486.493</u>	in <sup>3</sup>	
<u>V<sub>LIQUID</sub></u> =	<u>Volume of liquid, equal to V<sub>R2</sub> - V<sub>CORE</sub></u>	<u>7972.19</u>	mL	

Figure 13

RECEIVED  
JAN 16 2004  
TC 1700



## REPLACEMENT SHEET

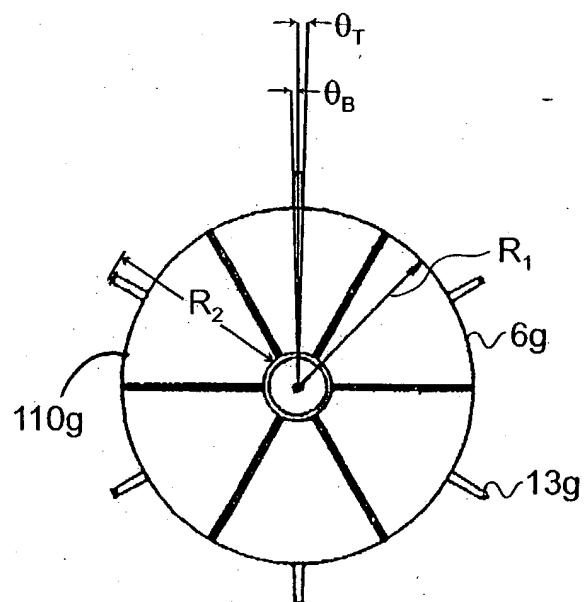
<u>D2</u> =	<u>Lateral distance across fin top</u>	<u>0</u>	in
<u>D1</u> =	<u>Lateral distance across fin bottom</u>	<u>0</u>	in
<u>R1</u> =	<u>Inner radius of the core</u>	<u>2.561</u>	in
<u>R2</u> =	<u>Outer radius of the core</u>	<u>2.598</u>	in
<u>n</u> =	<u>Number of fins</u>	<u>0</u>	number of fins
<u>L</u> =	<u>Length of core</u>	<u>30.089</u>	in
<u>THETAT</u> =	<u>Angle formed by one half the fin top surface</u>	<u>0.000</u>	radians
<u>THETAb</u> =	<u>Angle formed by one half the fin bottom surface</u>	<u>0.000</u>	radians
<u>C</u> =	<u>Length of segment connecting endpoints of D<sub>1</sub> and D<sub>2</sub></u>	<u>0.037</u>	in
<u>H<sub>TRAP</sub></u> =	<u>Height of a trapezoid between D<sub>1</sub> and D<sub>2</sub></u>	<u>0.037</u>	in
<u>V<sub>TRAP</sub></u> =	<u>Volume of a trapezoid included between D<sub>1</sub>, D<sub>2</sub>, and height</u>	<u>0.000</u>	in <sup>2</sup>
<u>THETA<sub>1</sub></u> =	<u>Central angle of chord formed at fin bottom</u>	<u>0.000</u>	radians
<u>V<sub>CHORD1</sub></u> =	<u>Volume formed by chord at fin bottom</u>	<u>0.00000</u>	in <sup>2</sup>
<u>THETA<sub>2</sub></u> =	<u>Central angle of chord formed at fin top</u>	<u>0.000</u>	radians
<u>V<sub>CHORD2</sub></u> =	<u>Volume formed by chord at fin top</u>	<u>0.00000</u>	in <sup>2</sup>
<u>V<sub>FIN</sub></u> =	<u>Volume of fin, equal to V<sub>TRAP</sub> + V<sub>CHORD2</sub> - V<sub>CHORD1</sub></u>	<u>0.000</u>	in <sup>2</sup>
<u>V<sub>R1</sub></u> =	<u>Volume of cylinder with a radius of R<sub>1</sub></u>	<u>619.960</u>	in <sup>3</sup>
<u>V<sub>CORE</sub></u> =	<u>Volume of Core, equal to nV<sub>FIN</sub> + V<sub>R1</sub></u>	<u>619.960</u>	in <sup>3</sup>
<u>V<sub>R2</sub></u> =	<u>Volume of cylinder with a radius of R<sub>2</sub></u>	<u>638.004</u>	in <sup>3</sup>
<u>V<sub>LIQUID</sub></u> =	<u>Volume of liquid, equal to V<sub>R2</sub> - V<sub>CORE</sub></u>	<u>18.043</u>	in <sup>3</sup>
<u>V<sub>LIQUID</sub></u> =	<u>Volume of liquid, equal to V<sub>R2</sub> - V<sub>CORE</sub></u>	<u>295.67</u>	mL

Figure 15

RECEIVED  
 JAN 16 2004  
 TC 1700



## REPLACEMENT SHEET



**FIG. 16**



## REPLACEMENT SHEET

<u>D2</u> =	<u>Lateral distance across fin top</u>	<u>0.083</u>	in
<u>D1</u> =	<u>Lateral distance across fin bottom</u>	<u>0.114</u>	in
<u>R1</u> =	<u>Inner radius of the core</u>	<u>2.145</u>	in
<u>R2</u> =	<u>Outer radius of the core</u>	<u>2.598</u>	in
<u>n</u> =	<u>Number of fins</u>	<u>6</u>	fins
<u>L</u> =	<u>Length of core</u>	<u>15.043</u>	in
<u>THETAT</u> =	<u>Angle formed by one half the fin top surface</u>	<u>0.016</u>	radians
<u>THETAB</u> =	<u>Angle formed by one half the fin bottom surface</u>	<u>0.027</u>	radians
<u>c</u> =	<u>Length of segment connecting endpoints of D<sub>1</sub> and D<sub>2</sub></u>	<u>0.454</u>	in
<u>H<sub>TRAP</sub></u> =	<u>Height of a trapezoid between D<sub>1</sub> and D<sub>2</sub></u>	<u>0.453</u>	in
<u>V<sub>TRAP</sub></u> =	<u>Volume of a trapezoid included between D<sub>1</sub>, D<sub>2</sub>, and height</u>	<u>0.672</u>	in <sup>2</sup>
<u>THETA<sub>1</sub></u> =	<u>Central angle of chord formed at fin bottom</u>	<u>0.053</u>	radians
<u>V<sub>CHORD1</sub></u> =	<u>Volume formed by chord at fin bottom</u>	<u>0.00087</u>	in <sup>2</sup>
<u>THETA<sub>2</sub></u> =	<u>Central angle of chord formed at fin top</u>	<u>0.032</u>	radians
<u>V<sub>CHORD2</sub></u> =	<u>Volume formed by chord at fin top</u>	<u>0.00028</u>	in <sup>2</sup>
<u>V<sub>FIN</sub></u> =	<u>Volume of fin, equal to V<sub>TRAP</sub> + V<sub>CHORD2</sub> - V<sub>CHORD1</sub></u>	<u>0.671</u>	in <sup>2</sup>
<u>V<sub>R1</sub></u> =	<u>Volume of cylinder with a radius of R<sub>1</sub></u>	<u>217.433</u>	in <sup>2</sup>
<u>V<sub>CORE</sub></u> =	<u>Volume of Core, equal to nV<sub>FIN</sub> + V<sub>R1</sub></u>	<u>221.461</u>	in <sup>3</sup>
<u>V<sub>R2</sub></u> =	<u>Volume of cylinder with a radius of R<sub>2</sub></u>	<u>318.970</u>	in <sup>3</sup>
<u>V<sub>LIQUID</sub></u> =	<u>Volume of liquid, equal to V<sub>R2</sub> - V<sub>CORE</sub></u>	<u>97.509</u>	in <sup>3</sup>
<u>V<sub>LIQUID</sub></u> =	<u>Volume of liquid, equal to V<sub>R2</sub> - V<sub>CORE</sub></u>	<u>1597.89</u>	mL

Figure 17

RECEIVED  
JAN 16 2004  
TC 1700

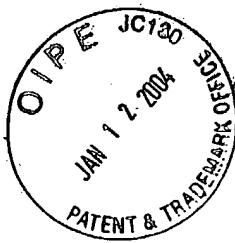


## REPLACEMENT SHEET

<u>D2</u> =	<u>Lateral distance across fin top</u>	<u>1.296</u>	in
<u>D1</u> =	<u>Lateral distance across fin bottom</u>	<u>1.327</u>	in
<u>R1</u> =	<u>Inner radius of the core</u>	<u>2.145</u>	in
<u>R2</u> =	<u>Outer radius of the core</u>	<u>2.598</u>	in
<u>n</u> =	<u>Number of fins</u>	<u>6</u>	number of fins
<u>L</u> =	<u>Length of core</u>	<u>15.043</u>	in
<u>THETA<sub>T</sub></u> =	<u>Angle formed by one half the fin top surface</u>	<u>0.252</u>	radians
<u>THETA<sub>B</sub></u> =	<u>Angle formed by one half the fin bottom surface</u>	<u>0.314</u>	radians
<u>C</u> =	<u>Length of segment connecting endpoints of D<sub>1</sub> and D<sub>2</sub></u>	<u>0.476</u>	in
<u>H<sub>TRAP</sub></u> =	<u>Height of a trapezoid between D<sub>1</sub> and D<sub>2</sub></u>	<u>0.476</u>	in
<u>V<sub>TRAP</sub></u> =	<u>Volume of a trapezoid included between D<sub>1</sub>, D<sub>2</sub>, and height</u>	<u>H<sub>TRAP</sub></u>	<u>9.393</u> in <sup>2</sup>
<u>THETA<sub>1</sub></u> =	<u>Central angle of chord formed at fin bottom</u>	<u>0.629</u>	radians
<u>V<sub>CHORD1</sub></u> =	<u>Volume formed by chord at fin bottom</u>	<u>1.40699</u>	in <sup>2</sup>
<u>THETA<sub>2</sub></u> =	<u>Central angle of chord formed at fin top</u>	<u>0.504</u>	radians
<u>V<sub>CHORD2</sub></u> =	<u>Volume formed by chord at fin top</u>	<u>1.07062</u>	in <sup>2</sup>
<u>V<sub>FIN</sub></u> =	<u>Volume of fin, equal to V<sub>TRAP</sub> + V<sub>CHORD2</sub> - V<sub>CHORD1</sub></u>	<u>9.056</u>	in <sup>2</sup>
<u>V<sub>R1</sub></u> =	<u>Volume of cylinder with a radius of R<sub>1</sub></u>	<u>217.433</u>	in <sup>2</sup>
<u>V<sub>CORE</sub></u> =	<u>Volume of Core, equal to nV<sub>FIN</sub> + V<sub>R1</sub></u>	<u>271.771</u>	in <sup>3</sup>
<u>V<sub>R2</sub></u> =	<u>Volume of cylinder with a radius of R<sub>2</sub></u>	<u>318.970</u>	in <sup>3</sup>
<u>V<sub>LIQUID</sub></u> =	<u>Volume of liquid, equal to V<sub>R2</sub> - V<sub>CORE</sub></u>	<u>47.199</u>	in <sup>3</sup>
<u>V<sub>LIQUID</sub></u> =	<u>Volume of liquid, equal to V<sub>R2</sub> - V<sub>CORE</sub></u>	<u>773.45</u>	mL

Figure 18

RECEIVED  
 JAN 16 2004  
 TC 1700



## REPLACEMENT SHEET

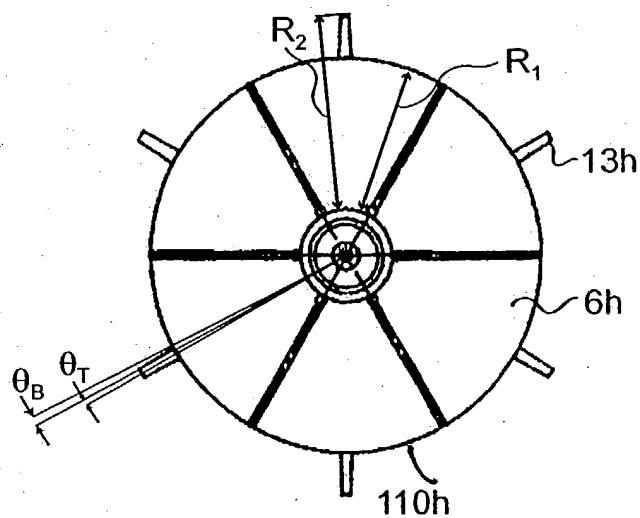
<u>D2</u> =	<u>Lateral distance across fin top</u>	<u>1.85</u>	in
<u>D1</u> =	<u>Lateral distance across fin bottom</u>	<u>1.881</u>	in
<u>R1</u> =	<u>Inner radius of the core</u>	<u>2.145</u>	in
<u>R2</u> =	<u>Outer radius of the core</u>	<u>2.598</u>	in
<u>n</u> =	<u>Number of fins</u>	<u>6</u>	<u>number of fins</u>
<u>L</u> =	<u>Length of core</u>	<u>15.043</u>	in
<u>THETA<sub>T</sub></u> =	<u>Angle formed by one half the fin top surface</u>	<u>0.364</u>	radians
<u>THETA<sub>B</sub></u> =	<u>Angle formed by one half the fin bottom surface</u>	<u>0.454</u>	radians
<u>C</u> =	<u>Length of segment connecting endpoints of D<sub>1</sub> and D<sub>2</sub></u>	<u>0.500</u>	in
<u>H<sub>TRAP</sub></u> =	<u>Height of a trapezoid between D<sub>1</sub> and D<sub>2</sub></u>	<u>0.500</u>	in
<u>V<sub>TRAP</sub></u> =	<u>Volume of a trapezoid included between D<sub>1</sub>, D<sub>2</sub>, and height</u>	<u>14.029</u>	in <sup>2</sup>
<u>THETA<sub>1</sub></u> =	<u>Central angle of chord formed at fin bottom</u>	<u>0.908</u>	radians
<u>V<sub>CHORD1</sub></u> =	<u>Volume formed by chord at fin bottom</u>	<u>4.14026</u>	in <sup>2</sup>
<u>THETA<sub>2</sub></u> =	<u>Central angle of chord formed at fin top</u>	<u>0.728</u>	radians
<u>V<sub>CHORD2</sub></u> =	<u>Volume formed by chord at fin top</u>	<u>3.17992</u>	in <sup>2</sup>
<u>V<sub>FIN</sub></u> =	<u>Volume of fin, equal to V<sub>TRAP</sub> + V<sub>CHORD2</sub> - V<sub>CHORD1</sub></u>	<u>13.069</u>	in <sup>2</sup>
<u>V<sub>R1</sub></u> =	<u>Volume of cylinder with a radius of R<sub>1</sub></u>	<u>217.433</u>	in <sup>2</sup>
<u>V<sub>CORE</sub></u> =	<u>Volume of Core, equal to nV<sub>FIN</sub> + V<sub>R1</sub></u>	<u>295.848</u>	in <sup>3</sup>
<u>V<sub>R2</sub></u> =	<u>Volume of cylinder with a radius of R<sub>2</sub></u>	<u>318.970</u>	in <sup>3</sup>
<u>V<sub>LIQUID</sub></u> =	<u>Volume of liquid, equal to V<sub>R2</sub> - V<sub>CORE</sub></u>	<u>23.122</u>	in <sup>3</sup>
<u>V<sub>LIQUID</sub></u> =	<u>Volume of liquid, equal to V<sub>R2</sub> - V<sub>CORE</sub></u>	<u>378.90</u>	mL

Figure 19

RECEIVED  
JAN 16 2004  
TC 1700

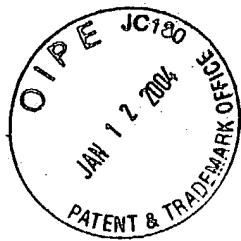


## REPLACEMENT SHEET



**FIG. 20**

RECEIVED  
JAN 16 2004  
TC 1700

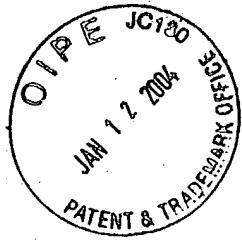


## REPLACEMENT SHEET

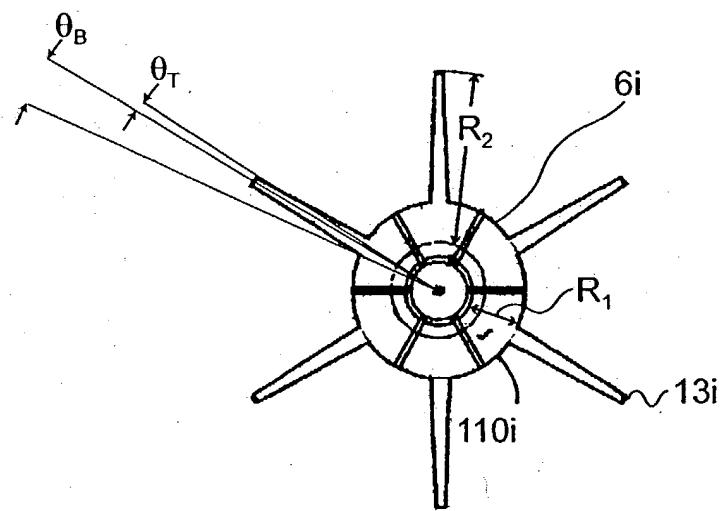
<u>D2</u> =	<u>Lateral distance across fin top</u>	<u>0.114</u>	in
<u>D1</u> =	<u>Lateral distance across fin bottom</u>	<u>0.145</u>	in
<u>R1</u> =	<u>Inner radius of the core</u>	<u>2.145</u>	in
<u>R2</u> =	<u>Outer radius of the core</u>	<u>2.598</u>	in
<u>n</u> =	<u>Number of fins</u>	<u>6</u>	<u>number of fins</u>
<u>L</u> =	<u>Length of core</u>	<u>15.043</u>	in
<u>THETAT</u> =	<u>Angle formed by one half the fin top surface</u>	<u>0.022</u>	radians
<u>THETAB</u> =	<u>Angle formed by one half the fin bottom surface</u>	<u>0.034</u>	radians
<u>c</u> =	<u>Length of segment connecting endpoints of D<sub>1</sub> and D<sub>2</sub></u>	<u>0.454</u>	in
<u>H<sub>TRAP</sub></u> =	<u>Height of a trapezoid between D<sub>1</sub> and D<sub>2</sub></u>	<u>0.454</u>	in
<u>V<sub>TRAP</sub></u> =	<u>Volume of a trapezoid included between D<sub>1</sub>, D<sub>2</sub>, and height</u>	<u>0.884</u>	in <sup>2</sup>
<u>THETA<sub>1</sub></u> =	<u>Central angle of chord formed at fin bottom</u>	<u>0.068</u>	radians
<u>V<sub>CHORD1</sub></u> =	<u>Volume formed by chord at fin bottom</u>	<u>0.00178</u>	in <sup>2</sup>
<u>THETA<sub>2</sub></u> =	<u>Central angle of chord formed at fin top</u>	<u>0.044</u>	radians
<u>V<sub>CHORD2</sub></u> =	<u>Volume formed by chord at fin top</u>	<u>0.00071</u>	in <sup>2</sup>
<u>V<sub>FIN</sub></u> =	<u>Volume of fin, equal to V<sub>TRAP</sub> + V<sub>CHORD2</sub> - V<sub>CHORD1</sub></u>	<u>0.883</u>	in <sup>2</sup>
<u>V<sub>R1</sub></u> =	<u>Volume of cylinder with a radius of R<sub>1</sub></u>	<u>217.433</u>	in <sup>3</sup>
<u>V<sub>CORE</sub></u> =	<u>Volume of Core, equal to nV<sub>FIN</sub> + V<sub>R1</sub></u>	<u>222.729</u>	in <sup>3</sup>
<u>V<sub>R2</sub></u> =	<u>Volume of cylinder with a radius of R<sub>2</sub></u>	<u>318.970</u>	in <sup>3</sup>
<u>V<sub>LIQUID</sub></u> =	<u>Volume of liquid, equal to V<sub>R2</sub> - V<sub>CORE</sub></u>	<u>96.241</u>	in <sup>3</sup>
<u>V<sub>LIQUID</sub></u> =	<u>Volume of liquid, equal to V<sub>R2</sub> - V<sub>CORE</sub></u>	<u>1577.11</u>	mL

**Figure 21**

RECEIVED  
JAN 16 2004  
TC 1700



## REPLACEMENT SHEET



**FIG. 22**

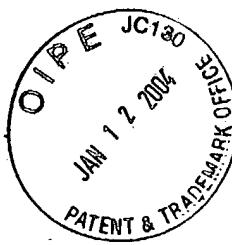


## REPLACEMENT SHEET

<u>D2</u> =	<u>Lateral distance across fin top</u>	<u>0.113</u>	in
<u>D1</u> =	<u>Lateral distance across fin bottom</u>	<u>0.313</u>	in
<u>R1</u> =	<u>Inner radius of the core</u>	<u>1.052</u>	in
<u>R2</u> =	<u>Outer radius of the core</u>	<u>2.598</u>	in
<u>n</u> =	<u>Number of fins</u>	<u>6</u>	number of fins
<u>L</u> =	<u>Length of core</u>	<u>15.043</u>	in
<u>THETAT</u> =	<u>Angle formed by one half the fin top surface</u>	<u>0.022</u>	radians
<u>THETAB</u> =	<u>Angle formed by one half the fin bottom surface</u>	<u>0.149</u>	radians
<u>c</u> =	<u>Length of segment connecting endpoints of D<sub>1</sub> and D<sub>2</sub></u>	<u>1.560</u>	in
<u>H<sub>TRAP</sub></u> =	<u>Height of a trapezoid between D<sub>1</sub> and D<sub>2</sub></u>	<u>1.557</u>	in
<u>V<sub>TRAP</sub></u> =	<u>Volume of a trapezoid included between D<sub>1</sub>, D<sub>2</sub>, and height</u>	<u>4.989</u>	in <sup>2</sup>
<u>THETA<sub>1</sub></u> =	<u>Central angle of chord formed at fin bottom</u>	<u>0.299</u>	radians
<u>V<sub>CHORD1</sub></u> =	<u>Volume formed by chord at fin bottom</u>	<u>0.03679</u>	in <sup>2</sup>
<u>THETA<sub>2</sub></u> =	<u>Central angle of chord formed at fin top</u>	<u>0.043</u>	radians
<u>V<sub>CHORD2</sub></u> =	<u>Volume formed by chord at fin top</u>	<u>0.00070</u>	in <sup>2</sup>
<u>V<sub>FIN</sub></u> =	<u>Volume of fin, equal to V<sub>TRAP</sub> + V<sub>CHORD2</sub> - V<sub>CHORD1</sub></u>	<u>4.953</u>	in <sup>2</sup>
<u>V<sub>R1</sub></u> =	<u>Volume of cylinder with a radius of R<sub>1</sub></u>	<u>52.300</u>	in <sup>2</sup>
<u>V<sub>CORE</sub></u> =	<u>Volume of Core, equal to nV<sub>FIN</sub> + V<sub>R1</sub></u>	<u>82.019</u>	in <sup>3</sup>
<u>V<sub>R2</sub></u> =	<u>Volume of cylinder with a radius of R<sub>2</sub></u>	<u>318.970</u>	in <sup>3</sup>
<u>V<sub>LIQUID</sub></u> =	<u>Volume of liquid, equal to V<sub>R2</sub> - V<sub>CORE</sub></u>	<u>236.951</u>	in <sup>3</sup>
<u>V<sub>LIQUID</sub></u> =	<u>Volume of liquid, equal to V<sub>R2</sub> - V<sub>CORE</sub></u>	<u>3882.94</u>	mL

Figure 23

**RECEIVED**  
 JAN 16 2004  
 TC 1700



## REPLACEMENT SHEET

<u>D2</u> =	<u>Lateral distance across fin top</u>	<u>0</u>	<u>in</u>
<u>D1</u> =	<u>Lateral distance across fin bottom</u>	<u>0</u>	<u>in</u>
<u>R1</u> =	<u>Inner radius of the core</u>	<u>2.561</u>	<u>in</u>
<u>R2</u> =	<u>Outer radius of the core</u>	<u>2.598</u>	<u>in</u>
<u>n</u> =	<u>Number of fins</u>	<u>0</u>	<u>number of fins</u>
<u>L</u> =	<u>Length of core</u>	<u>15.043</u>	<u>in</u>
<u>THETA<sub>T</sub></u> =	<u>Angle formed by one half the fin top surface</u>	<u>0.000</u>	<u>radians</u>
<u>THETA<sub>B</sub></u> =	<u>Angle formed by one half the fin bottom surface</u>	<u>0.000</u>	<u>radians</u>
<u>c</u> =	<u>Length of segment connecting endpoints of D<sub>1</sub> and D<sub>2</sub></u>	<u>0.037</u>	<u>in</u>
<u>H<sub>TRAP</sub></u> =	<u>Height of a trapezoid between D<sub>1</sub> and D<sub>2</sub></u>	<u>0.037</u>	<u>in</u>
<u>V<sub>TRAP</sub></u> =	<u>Volume of a trapezoid included between D<sub>1</sub>, D<sub>2</sub>, and height</u>	<u>H<sub>TRAP</sub></u>	<u>0.000</u> <u>in<sup>2</sup></u>
<u>THETA<sub>1</sub></u> =	<u>Central angle of chord formed at fin bottom</u>	<u>0.000</u>	<u>radians</u>
<u>V<sub>CHORD1</sub></u> =	<u>Volume formed by chord at fin bottom</u>	<u>0.00000</u>	<u>in<sup>2</sup></u>
<u>THETA<sub>2</sub></u> =	<u>Central angle of chord formed at fin top</u>	<u>0.000</u>	<u>radians</u>
<u>V<sub>CHORD2</sub></u> =	<u>Volume formed by chord at fin top</u>	<u>0.00000</u>	<u>in<sup>2</sup></u>
<u>V<sub>FIN</sub></u> =	<u>Volume of fin, equal to V<sub>TRAP</sub> + V<sub>CHORD2</sub> - V<sub>CHORD1</sub></u>	<u>0.000</u>	<u>in<sup>2</sup></u>
<u>V<sub>R1</sub></u> =	<u>Volume of cylinder with a radius of R<sub>1</sub></u>	<u>309.949</u>	<u>in<sup>2</sup></u>
<u>V<sub>CORE</sub></u> =	<u>Volume of Core, equal to nV<sub>FIN</sub> + V<sub>R1</sub></u>	<u>309.949</u>	<u>in<sup>3</sup></u>
<u>V<sub>R2</sub></u> =	<u>Volume of cylinder with a radius of R<sub>2</sub></u>	<u>318.970</u>	<u>in<sup>3</sup></u>
<u>V<sub>LIQUID</sub></u> =	<u>Volume of liquid, equal to V<sub>R2</sub> - V<sub>CORE</sub></u>	<u>9.021</u>	<u>in<sup>3</sup></u>
<u>V<sub>LIQUID</sub></u> =	<u>Volume of liquid, equal to V<sub>R2</sub> - V<sub>CORE</sub></u>	<u>147.82</u>	<u>mL</u>

Figure 25

**RECEIVED**

JAN 16 2004

TC 1700